

Chaebol-affiliated analysts: conflicts of interest and market responses

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Abstract

Korean business groups, or chaebols, own securities firms that issue analysts' reports on their member companies. This structure is unique in that Korean industrial companies are allowed to control the securities firms. We investigate the accuracy and informational content of earnings forecasts, stock recommendations, and target prices made by the chaebol-affiliated analysts, using data collected over the period between 2000-2008. The chaebol analysts tend to make more optimistic earnings forecasts for the member companies. The mean EPS forecast error (5.36%) of the affiliated analysts for the same chaebol company are significantly larger than that (3.23%) of other chaebol and independent analysts. The chaebol analysts also assign better recommendations by almost one level and set target prices 2.5% higher to the member companies after controlling for company and analyst characteristics. These results are consistent with the hypothesis that chaebol analysts' reports are biased by conflicts of interest. Stock market reactions do not differ in response to announcements of stock recommendations issued by affiliated vs. non-affiliated analysts. This suggests that capital markets do not recognize the conflicts of interest inherent in chaebol analysts' reports.

Key words: Business groups, chaebols, conflicts of interest, analysts' earnings forecasts, stock recommendations, target prices

JEL classification: G30

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1. Introduction

Since the late 1990s, much attention has been focused on sell-side research that is tainted by conflicts of interests between investment banking and research departments of securities firms in the United States. The conflicts of interests have aggravated the general public mistrust on the information content of analysts' reports and increased a demand for regulation. Investigation of these conflicts of interest has led regulators and ten of the largest securities firms to reach Global Research Analysts Settlement in 2003, mandating that investment banks physically separate their banking and analysis departments with internal firewalls. Similar regulation has spread across the globe in hopes of curbing these conflicts of interest.

We are interest in investigating conflicts of interests inherent in analysts' reports from a different perspective. Even though business groups dominate economy in many emerging markets, South Korea is very unique in that it allows industrial companies to own a securities firm within a business group. Some business groups, or chaebols, in Korea have a long history of owning securities firms as subsidiaries, and other Korean chaebols have recently tried to acquire such firms. The following press release, dated January 13, 2008, from the *Dow Jones International News*, is one of the latest acquisition examples:

“Hyundai Automotive Group said Monday it has signed an agreement to acquire a controlling stake in a small securities firm, Shinheung Securities, in a move to enter the capital markets industry... Like others, Hyundai would aim to grow as an investment banking firm, but it may have to continue to rely largely on the retail brokerage business at the initial stage as the local investment banking market is still immature.”

The Korean chaebol structure can incur conflicts of interests when analysts belonging to the chaebols issue analysts' reports on the member companies within the same group. Accordingly, this structure provides a natural experiment to test the effects of conflicts of interest incurred by the affiliated analysts on capital markets.

The analysts in the chaebol-affiliated securities firms issue analysts' reports for member companies within the same chaebols, and also provide analysis for chaebol-members' direct competitors, which are either independent or belong to other chaebols. This study analyzes whether chaebol-affiliated analysts ("chaebol analyst" hereafter) incur conflicts of interest when they make earnings forecasts, stock recommendations, or target prices for member companies.

Chaebols have an extensively inter-woven ownership structure through pyramidal and cross-shareholdings among the affiliated companies. Chang and Hong (2000) find that chaebol affiliated companies ("chaebol companies" hereafter) benefit from group membership by sharing intangible and financial resources and making internal transactions with other member companies. The securities firms within a chaebol usually play an important role in the internal capital market when the chaebol pools the funds generated from affiliated companies and reallocates them from the group headquarters.

A survey by the Korea Development Institute (2003) reports that the owner-managers of chaebols establish the general direction of the group as a whole. They are also involved with the individual member companies' personnel matters and financial projects. The owner-managers usually have the power to transfer capital and managerial resources among the member companies. The ability to transfer assets in a weak system of minority shareholder protection can cause expropriation of minority shareholders. Bae, Kang, and Kim (2002) find that the pyramidal or cross shareholding structures in chaebol companies facilitate tunneling at the

expensive of minority shareholders. There is also anecdotal evidence that chaebol-affiliated securities firms support the businesses of other member companies through securities trading. For instance, *Maeil Business News* reported on February 17, 2008 that “Samsung Securities CEO and others accused of Samsung SDS’ issue of bond with warrant (BW) at an irrationally low price to their controlling family members were also summoned and investigated as reference status.” The member companies within a chaebol tend to have close business relations with one another and provide support for each other. The securities firms within chaebols also tend to obtain brokerage business from other member companies. These relations between securities firms and other member companies within the same chaebols may compel chaebol analysts to focus on optimistic information and to avoid issuing negative recommendations or price forecasts. This suggests that chaebol analysts are expected to provide more optimistic earnings forecasts, stock recommendations, or target prices on the member companies than non-affiliated analysts. In this study, we test the “conflicts of interest hypothesis”. Since the potential for conflicts of interest is intrinsic in their organization structure, Korean chaebols provide a unique environment to test the hypothesis.

We collect data on analysts’ earnings forecasts, stock recommendations, and target prices issued on Korean companies over the period of 2000-2008. We find that eight out of the top 30 chaebols (26.67%) own securities firms. We first investigate whether chaebol analysts incur conflicts of interest when they make earnings forecasts. We find that chaebol analysts make more optimistic earnings forecasts than independent analysts. Since chaebol companies and independent companies have distinct characteristics, we limit our sample to chaebol analysts’ forecasts on the chaebol companies. The chaebol analysts make more optimistic earnings forecasts on the companies belonging to their own chaebols compared to those on the companies

belonging to other chaebols. The mean EPS forecast error (5.01%) by analysts affiliated with the same chaebols is significantly larger than that (3.80%) made by analysts affiliated with other chaebols. We also find that for the same chaebol company, its analysts issue more optimistic earnings forecasts than other chaebol- and independent analysts (Mean EPS forecast errors of 5.36% vs. 3.23%). The difference remains significant even after controlling for company and analyst characteristics.

Our second set of tests focuses on the investment recommendations and target prices analysts periodically issue on companies. We find that the chaebol analysts issue “buy” or “strong buy” recommendations more frequently for the member companies than for other chaebol and independent companies. For the same chaebol company, its analysts issue better recommendations than other chaebol and independent analysts. After controlling for company and analyst characteristics, the chaebol analysts issue better recommendations on the member companies within the same chaebol by about one level than other analysts. Similarly, results show that for the same chaebol company, its analysts set target stock prices at 2.5% higher on average than other chaebol and independent analysts. Overall, the results strongly suggest that the conflicts of interest experienced by the chaebol analysts produce biased EPS forecasts, stock recommendations, and target prices, which is consistent with the conflict of interest hypothesis.

Our third set of tests investigates how capital markets respond to chaebol analysts’ stock recommendations on the member companies within the same chaebol. Conflicts of interest do not necessarily have negative economic consequences or call for regulation if they are adequately priced by financial markets. Investors, recognizing conflicts of interest, can downplay the informational value of the chaebol analysts’ forecasts about the member companies in their own chaebol. We test whether there is a difference in cumulative abnormal

returns (CARs) on the same chaebol company' stock around the announcements of recommendations made by the affiliated vs. other analysts. We do not find any statistical difference in the CARs. This result indicates that investors place similar value to recommendations issued by chaebol-affiliated and non-affiliated analysts, suggesting that investors do not recognize the conflicts of interest suggested by the results of our analysis.

Our research contributes to extant literature in two folds. First, our findings contribute to the research on business groups. Previous literature has documented the benefits and costs of the group structure. In a cross-country study, Masulis, Pham, and Zein (2010) find that the continuing prevalence of family groups reflects their ability to support high-risk, capital intensive firms. Bae et al. (2002) and Baek, Kang, Lee (2006) document evidence of tunneling, in that the controlling shareholders of the chaebols siphon resources out of the member companies to increase their own wealth at the expense of minority shareholders. Baek, Kang, and Park (2004) also find that firm value is negatively related to the separation of cash flow and control rights of controlling shareholders in the chaebols. Our research indicates that the chaebol structure induces chaebol analysts to make biased forecasts for the member companies. As long as investors do not recognize the conflicts of interest in chaebol-analysts' reports, they can be misled by the analysts' forecasts. Our evidence adds to the costs incurred by the chaebol structure.

Second, our research contributes to previous findings on analysts' conflicts of interest even though these conflicts occur in a different setting. Sell-side analysts working for an investment bank are pressured to provide optimistic recommendations on firms that can provide business to the investment bank. Analysts working in brokerage houses also have pressure to provide optimistic recommendations to attract trading revenues because upgrades attract more

business than downgrades due to restrictions in short selling.¹ The analysts' conflicts of interest have spurred a large body of literature.² Dugar and Nathan (1995), Michaely and Womack (1999), Cowen, Groysberg, and Healy (2006), Ljungqvist, Marston, Starks, Wei, and Yan (2007), and Agrawal and Chen (2008) find evidence consistent with the conflicts of interest. Analysts affiliated with investment banks and brokers produce more optimistic earnings forecasts and are more likely to give buy recommendations. The affiliated analysts are also slower to revise downward their buy and hold recommendations (O'Brien, McNichols, and Lin (2005)). In addition, they issue buy (sell) recommendations that underperform (outperform) those issued by non-affiliated analysts (Cliff (2007) and Barber, Lehavy, and Trueman (2007)).³ Our research is broadly consistent with previous literature on the affiliated analysts' incentives, and provides new evidence that analysts affiliated with business groups incur the conflicts of interests.

The next section presents a summary of the institutional background and prior studies on Korean chaebols. Section 3 discusses the sample construction and characteristics. Section 4 presents empirical results and Section 5 concludes this study.

2. Institutional background of Korean chaebols and literature review

South Korea is one of a few countries that allow industrial companies to own a securities firm within a business group. The South Korean Bank Act does not allow industrial companies to own more than 4% of a bank's shares. However, industrial companies belonging to chaebols can be controlling shareholders in non-bank financial institutions, such as insurance and

¹ In the US, the Securities and Exchange Commission makes the information about these conflicts of interest available to investors at <http://www.sec.gov/investor/pubs/analysts.htm>

² Mehran and Stulz(2007) provide an excellent summary of this literature.

³ Some studies cast doubts on the existence of conflicts of interest. For instance, Jacob, Rock, and Weber (2008) find that short-term earnings forecasts made by investment banks are more accurate and less optimistic than those made by independent research firms. Clarke, Khorana, Patel, and Rau (2007) reports that All-Star analysts resist pressures from investment bankers. Irvine (2004) find that the increase in brokerage trading is not affected by the bias in earnings forecast in firms listed in the the Toronto Stock Exchange.

brokerage firms, if the ratio of total debt to equity at the group level is lower than 200 percent. Many chaebols in Korea own insurance and securities firms as subsidiaries. For instance, Samsung Group owns Samsung Life Insurance, Samsung Fire-Marine Insurance, Samsung Securities, and Samsung Credit Cards.

Korean chaebols have played an important role within the context of the Korean economy. Chaebols have been the main driving force behind the fast-growing Korean economy since the 1960s, and they account for a large portion of business activities. The top 30 largest chaebols have 568 member companies and account for about 36% of total sales and 26% of the total employment in Korea as of 2005. Chaebols have also been criticized as one of the primary causes of the 1997 financial crisis due to their overinvestment, higher leverage, and poor governance. Even though business groups are common in developing and developed countries, these Korean business groups have some unique characteristics.

First, a company within a chaebol maintains substantial business ties with other member companies. The member companies are affiliated through reciprocal shareholdings and pyramidal share ownership, cross-debt guarantees, resource sharing, and internal business transactions. Even though the member companies are legally independent, they operate like business units of a large corporation. In addition, the chaebols are extremely horizontally diversified since they operate in various industries. For instance, Samsung Group has businesses in the industries of electronics, shipbuilding, chemicals, insurance, brokerage, etc (Chang and Hong (2000)).

Second, chaebols are also characterized by a divergence between ownership and control. Although the chaebols have substantial economic power in Korea, controlling shareholders (typically, owner-managers or the founding family) exercise full control over the member

companies. The controlling shareholders can allocate capital and managerial resources and have the discretionary power to make key personnel exchanges among the member companies even though they hold a relatively small portion of cash flow rights at the group level. The chaebols are family-dominated and highly centralized in terms of decision-making, even though they consist of large companies and are widely diversified.

Chaebols' financial firms (insurance or securities) and other member companies rich in cash can serve as substitutes for external financing in an economy without developed external capital markets.⁴ However, a legal system with weak minority shareholder protection can be a fertile ground for different types of agency conflicts. Prior literature on chaebols has explored the trade-off between the benefits provided by diversification and internal capital markets in chaebols and the presence of agency conflicts generated by its unique ownership characteristics.

Shin and Park (1999) find evidence that there is an internal capital market in a chaebol structure, and the existence of this internal capital market reduces the financing constraints of the chaebol. Lee, Park, and Shin (2009) also report that the internal capital markets inside chaebols played a positive role in attenuating the 1997 -1998 financial crisis in South Korea. However, the acknowledged importance of cross-subsidization seems to have faded away after the financial crisis. Other studies report evidence suggesting negative cross-subsidization. Bae et al. (2002) analyze Korean merger activity from 1981 to 1997. They report that, while minority shareholders experience a loss, controlling shareholders benefit because of the increase in value of other firms in the chaebol. This finding supports the tunneling view for business groups.

⁴ As an example of the level of economic development and protection of minority rights, South Korea ranks 40 (out of 179) in the 2009 Index of Economic Freedom, with a score that categorized South Korea as a "moderately free country" This index is published by the Wall Street Journal and the Heritage Foundation and combines statistics from the IMF, World Bank, and the Economist Intelligence Unit. Greenspan (2007, p. 276) states that the "Index of Economic Freedom" fairly reflects the effect of economic freedom on economic activity.

Baek et al. (2006) also report empirical findings suggesting that tunneling affects the pricing of private securities offerings by South Korean firms from 1989 to 2000.

Bae, Cheon, and Kang (2008) report that the announcement of increased (decreased) earnings by a chaebol-affiliated firm is positively (negatively) related to the excess returns of a non-announcing affiliate. This result highlights the ties between the firms in the same business group. However, they argue that the evidence is not consistent with efficient internal capital markets, but rather with the transfers of resources to financially troubled subsidiaries in what is known as propping. Diversification and increase of debt capacity can be more reasons to explain the organizations of chaebols and in particular the acquisition of financial firms by industrial companies. However, Ferris, Kim, and Kitsabunnarat (2003) find that although chaebols exhibit larger debt capacity, companies belonging to a chaebol are valued at a discount when compared to non-chaebol-affiliated companies.

In this study, we focus on how the co-existence of industrial companies and securities firms within chaebols affects the chaebol analysts' forecasting behaviors. Even though a growing number of studies investigate the properties of analyst forecasts across countries, there seems to be little research investigating the relation between business groups and analyst forecasts. Chang, Khanna, and Palepu (2000) examine the influence of business groups on analyst activity in 15 emerging markets in Asia and Latin America. They find that the earnings of group affiliates are harder to forecast due to inadequate disclosure regarding related party transactions among group companies than those of unaffiliated companies. They also find that companies affiliated with groups have higher analyst following, and larger forecast errors and dispersion. Unlike Chang et al. (2000), we focus on the conflicts of interests incurred by the group-affiliated analysts in Korea.

Chaebol-affiliated securities firms have business ties with other member companies. A founding family and affiliated industrial companies are typically controlling shareholders of the securities firms within the same chaebol. For instance, Samsung's founding family and other affiliated companies own about 25% of Samsung Securities' shares. Due to the substantial business ties and personnel exchanges among the companies within a chaebol, chaebol analysts can have more information about the future prospects of the member companies within the chaebol. The chaebol analysts also have access to the information about investment opportunities of the member companies through internal capital markets. These business ties with the affiliated companies and the high equity ownership of the affiliated companies in securities firms can force the chaebol analysts to slant their reports about the member companies. There is also anecdotal evidence that chaebol-affiliated securities firms have illegally supported the issuance of securities of the member companies. These conflicts of interest may lead chaebol analysts to make more optimistic EPS forecasts, stock recommendations, or target prices on member companies within the same chaebol as compared to independent analysts or analysts belonging to other chaebols.

Recently, some studies investigate the difference in reports issued by local vs. foreign analysts. Conroy, Fukuda, and Harris (1997) find that local brokerage houses produce more accurate earnings forecasts than foreign brokerage houses in Japan. Bae, Stulz, and Tan (2008) also find that analysts make more precise earnings forecasts for firms in countries wherein they reside than analysts who do not live in that country. This local advantage can be explained by the distance effect in that local analysts have a significant information advantage over foreign analysts. However, the impact of the Korean chaebol structure on analysts' forecasts may go beyond the simple distance effect.

3. Sample and descriptive statistics

To investigate the accuracy and optimism of Korean analysts' forecasts, we first obtain the data in analysts' reports on South Korean companies from a database, *FnConsensus* of FnGuide. The South Korean financial data provider, FnGuide, collects data on local analysts' reports since 2000. Due to this time limitation, our sample includes analysts' forecasts for South Korean companies over the period of 2000-2008. We focus on local analysts' reports since Bae et al. (2008) document that local analysts make more precise earnings forecasts for companies in their countries than do foreign analysts. We exclude financial companies, since such companies are heavily regulated and less subject to information asymmetry than are industrial companies. In this way, we assess the data from 242,733 analysts' reports issued by 1,011 analysts over the sample period in the *FnConsensus*. These reports include earnings forecasts, stock recommendations, or target prices issued by analysts. In 2008, the analysts cover 601 companies, which comprise about 36% of the companies listed in the Korean Stock Exchange (KSE) or KOSDAQ.

From the *FnConsensus*, we collect the first earnings forecasts issued each year by each analyst and the following forecasts if they are changed from previous ones. We exclude earnings forecast data for upcoming quarters and only include forecast data for the fiscal year-end EPS. We obtain 164,249 EPS forecasts over the sample period, 2000-2008, for 1,477 distinct companies. We also collect all the stock recommendations and target prices issued by the analysts for the companies covered. Our sample includes 211,402 stock recommendations and 172,093 target prices issued by the analysts. We get the issue dates of earnings forecasts, recommendations, and target prices, analysts' names, and the names of securities firms the analysts work for from the *FnConsensus*.

To determine whether analysts work for chaebol-affiliated or independent security firms, we identify the firms' affiliation with chaebols by following the guidelines of the Korea Fair Trade Commission (KFTC). The KFTC defines a business group or chaebol as "a group of companies, more than 30% of whose shares are owned by the same individuals or by companies controlled by those individuals," and announces the list of business groups each year. Among the business groups designated by the KFTC, we exclude the groups owned by the Korean government⁵. We then define the top 30 business groups based on total assets as chaebols each year over the sample period, and consider all others "independent" following previous literature⁶. We obtain the annual list of chaebols and the member companies from the KFTC. We then check whether each security firm and each company covered in our sample are affiliated to the top 30 chaebols each year. In this way, we identify chaebol-affiliated and independent analysts, and chaebol-affiliated and independent companies.

We combine accounting and stock return data with the analysts' forecast data. We obtain annual accounting data on the 1,477 companies covered by analysts over some period of 2000-2008 from *Total Solution 2000* (TS 2000), a database compiled by the *Korean Listed Companies' Association*. The TS2000 classifies the companies into 83 industry groups. We also obtain stock return data of the sample companies and Korean market index around the issue dates of analysts' reports from a database (*KIS-value*) of *Korean Information Service* (KIS). The KIS is affiliated with Moody's and is a leading provider of credit-related information and services in South Korea.

⁵ After the government owned groups are excluded, about 40-50 business groups are designated by the KFTC each year.

⁶ For examples, refer to Joh(2003) and Baek et al. (2006). See Bae et al. (2002) for the importance of the top 30 chaebols.

Table I lists the names of the top 30 chaebols and the number of chaebol companies covered by analysts. Table I also indicates whether each chaebol owns a security firm as of January 2008. Out of 30 chaebols, eight chaebols (27%) own security firms.

<Insert Table I here>

Table II reports the descriptive statistics of the data on analysts' EPS forecasts. Panel A provides the number of companies covered by analysts, the number of analysts, and the number of security firms year by year. The number of chaebol companies ranges from 89 to 118 each year, while the number of independent companies ranges from 351 to 628. In total, 925 company-years (17.4%) are chaebol-affiliated, and 4,383 company-years (82.6%) are independent. The number of analysts in Korea significantly increased in early 2000s. The number of chaebol analysts ranges from 70 to 167 each year, while that of independent analysts ranges from 93 to 349. In total, 1,199 analyst-years (34.8%) are chaebol-affiliated, and 2,245 analyst-years (65.2%) are independent. The number of securities firms that has produced research reports over the period of 2000-2008 ranges from 25 to 35 firms. Out of the 35 securities firms as of 2008, 8 firms (22.9%) are chaebol-affiliated.

<Insert Table II here>

Panel B of Table II reports the means, medians, standard deviations (Std), minimums (Min), and Maximums (Max) of each variable used in the analyses. We calculate EPS forecast error (FE) and absolute EPS forecast error (ABSFE) using the forecasted EPS and actual EPS. Following Hong and Kubic (2003), we measure the forecast error by analyst i for company j on day t as follows:

$$FE_{it} = \frac{F_{it} - A_{jt}}{P_{jt-1}} \quad (1)$$

where F_{it} is the forecast of a year-end EPS issued by analyst i for company j on day t , A_j is the actual year-end EPS of the company j for the year, and P_{t-1} is a closing stock price of the company on day $t-1$. ABSFE is the absolute value of the EPS forecast error (FE). Since extreme forecast errors can distort the results of analyses, we winsorize the EPS forecasts if the EPS forecast errors belong to the top or bottom one percent. The mean FE and the median FE are 4.54% and 1.41% with the standard deviation of 14.49%, respectively. The mean ABSFE and the median ABSFE are 6.57% and 2.52%, respectively, with the standard deviation of 13.69%. The results on FE and ABSFE suggest that the analysts tend to make optimistic earnings forecasts, which is consistent with the findings of previous literature. The mean or median number of analysts employed by each securities firm each year is about 21 analysts. The mean number of companies covered by each analyst-year is 13.92, and the mean number of industries covered by each analyst-year is 4.75. The mean number of days from the day of issuing analysts' reports to the fiscal year-end date is 145.

4. Empirical Results

4.1. Analyst earnings forecasts and accuracy

The accuracy of analysts' forecasts may depend on the characteristics of the companies they cover. Previous literature documents that the characteristics of chaebol companies are very different from those of independent companies since chaebols dominate the Korean economy. Therefore, we need to control for the different company characteristics when we investigate the analysts' forecasts. The results, reported in Table III, Panel A, indicate that chaebol-member companies tend to be significantly larger in asset size and more highly levered than independent companies. On the other hand, chaebol members report significantly lower operating

performance, measured by return on assets (ROA), and they have a higher ratio of intangible assets to total assets. They also display significantly lower investments in R&D as a percentage of assets and lower growth opportunities measured by the market-to-book ratio of equity. The results show that chaebol companies are significantly larger and highly levered, and have lower growth opportunities as compared to independent companies. In addition, the mean number of analysts following for independent companies is significantly smaller than that for chaebol companies (14.93 vs. 22.68). These suggest that chaebol companies face less information asymmetry, since they are covered by more analysts. If the accuracy of analysts' forecasts depends on the information asymmetry of the companies covered, analysts may make more accurate forecasts for the chaebol companies than for independent companies.

<Insert Table III here>

Panel B of Table III presents the differences in forecast characteristics issued by analysts for chaebol-affiliated and independent companies. The EPS forecast error and the absolute value of the forecast error are both significantly lower for chaebol companies, which is consistent with indications in Panel A of Table III. This result is not consistent with Chang et al.'s (2000) finding that the earnings of group affiliates are harder to forecast. Mean forecast error (absolute value of forecast error) for independent companies is 5.58% (7.32%), compared to 3.25% (5.92%) for chaebol companies. Differences in means are significant at the 1% level for both measurements of forecast accuracy. We measure the number of analysts employed by each securities firm each year to control for the size of the securities firm. The panel shows that analysts who work for even smaller securities firms cover chaebol companies, since chaebol companies tend to be larger. To measure the workloads of analysts, we use the number of

companies and industries covered by each analyst-year. The panel shows that analysts covering chaebol companies have a lighter workload than those covering independent companies.

Forecast characteristics issued by independent analysts are compared to chaebol analysts in Panel C of Table III. The results show that chaebol analysts tend to make more optimistic EPS forecasts than independent analysts. The forecast error and the absolute value of the forecast error are both significantly lower for independent firms (mean FE of 4.13% and ABSFE of 6.22% for independent analysts vs. 5.10% and 7.35% mean FE and ABSFE, respectively for chaebol analysts), indicating that these optimistic forecasts by independent analysts are more accurate. According to the results in this panel, analysts who work for chaebol-affiliated securities firms seem to cover fewer companies and industries, on average, compared to analysts who work for independent securities firms. In addition, chaebol-affiliated securities firms are significantly larger than independent securities firms. Previous literature argues that analysts who work for larger securities firms can use more resources to prepare their reports. Our results suggest that chaebol analysts make less accurate EPS forecasts than independent analysts, even though they have more resources and a lighter workload.

<Insert Table IV here>

Table IV presents the results of univariate tests on the effects of chaebol affiliation on earnings forecast accuracy. We find in Panel C of Table III that the earnings forecasts issued by independent analysts tend to be more accurate (having, on average, significantly lower FE and ABSFE). To examine the conflicts of interest incurred by chaebol analysts, we mainly test the following two hypotheses:

H1: Chaebol analysts are more optimistic for their member companies than for other chaebol and independent companies.

H2: For the same chaebol member company, its analysts are more optimistic than other

chaebol and independent analysts.

Panel A of Table IV reports the test results of the first hypothesis. The EPS forecast errors (mean FE and mean ABSFE) for other chaebol and independent companies issued by chaebol analysts are not statistically different from those for the member companies within the same chaebol. This result seems inconsistent with our conflicts of interest argument. Since the fact that EPS forecast errors are higher for independent companies might distort the result, we then limit our sample EPS forecasts issued by chaebol analysts for chaebol companies. The mean (median) forecast error for other chaebol companies 3.80% (0.79%) is significantly lower than that (mean FE of 5.01% and median FE of 0.98%) for the companies within the same chaebol, which is consistent with the conflicts of interest hypothesis.

Panel B of Table IV presents the test results of the second hypothesis. The sample for this test includes EPS forecasts for the same chaebol company issued by analysts affiliated with different chaebols and independent analysts vs. analysts affiliated with the same chaebol. The result shows that analysts affiliated with the same chaebol make higher mean forecast errors and absolute forecast errors. This lower level of accuracy by analysts with the same chaebol affiliation is consistent with the conflict of interest hypothesis. Chaebol analysts tend to issue more optimistic EPS forecasting for companies within their own chaebol, and these forecasts tend to be significantly less accurate compared to those issued by analysts in different chaebols.

We then test whether conflicts of interests incurred by chaebol analysts explain EPS forecast errors even after controlling for other determinants. Since our sample is a time-series and cross-sectional data (panel data), we run ordinary least square (OLS) with clustered standard errors and fixed effects regressions, and present the results in Table V⁷. The dependent variables are EPS forecast errors in all models. We include the following control variables from prior

⁷ Refer to Peterson (2009) for regressions on panel data.

studies to control for company and analysts' characteristics⁸: a natural log of assets and a natural log of the number of analysts to control for information asymmetry; a natural log of analysts per securities firm to control for the size of securities firm; the number of companies covered by the analyst to control for the workload of the analyst; and the number of days until the end of the fiscal year. We also include a ratio of long-term debt to assets and a ratio of intangible assets to assets as control variables.

We first report the results of OLS regression in which standard errors are clustered across company and year. The coefficient on the log of assets is significantly negative (-0.006; $p < 0.01$), indicating that analysts' EPS forecasts tend to be more accurate for larger companies. The coefficients on the ratio of long-term debt to assets and the ratio of intangible assets to assets are positive and statistically significant, indicating that analysts' forecast errors are bigger for the companies with higher leverage and more intangible assets. The coefficient on the number of analysts following is significantly negative, indicating that analysts' EPS forecasts tend to be more accurate for companies with less information asymmetry. Analysts who work for larger securities firms would be expected to use more resources to produce the research reports, leading to lower forecast errors. However, the results in Table V indicate a positive association between the number of analysts working for a securities firm and the accuracy in EPS forecast, which is inconsistent with previous literature. The coefficients on a natural log of a number of companies cover by each analyst-year is significantly positive. A higher number of companies covered by an analyst should reduce the available time and effort allocated to each forecast, leading to less accurate forecasts. Also as expected, the forecast errors are larger the longer the time between the recommendation and the release of the actual EPS at the end of the fiscal year.

<Insert Table V here>

⁸ For instance, look at Ljungqvist et al. (2007) and Bae et al. (2008).

We include a dummy variable indicating chaebol companies in the regressions since we find, in Panel A of Table III, that the chaebol companies have distinct characteristics. The coefficients on chaebol companies are not statistically significant in the OLS models. We find that chaebol analysts issue less accurate earnings forecasts as indicated by the coefficients of chaebol analysts in Models 1 and 2. In Model 2, we add a dummy variable to indicate that companies and analysts are affiliated with the same chaebol. The coefficient on this dummy variable is 0.016 ($p=0.08$), indicating that the same chaebol affiliation is associated with less accurate forecasts. We re-estimate Model 1 and Model 2 using fixed effects regressions. The coefficients on control variables remain qualitatively unchanged. The coefficients on chaebol companies are now significantly positive, which means that the EPS forecasts on chaebol companies are more optimistic. The coefficient on the same chaebol affiliation is 0.011 with a p -value of less than 0.01 in Model 2. This result is also consistent with the conflict of interest hypothesis. Overall the results in Table IV and V suggest that analysts who work for chaebol-affiliated securities firms make more optimistic EPS forecasts for companies affiliated with the same chaebol.

4.2. Analysts' recommendations and target prices

Korean analysts also provide stock recommendations and target prices. This section analyzes the effect of analyst's affiliation with a chaebol on stock recommendations and target prices. Analysts issue five types of recommendations: strong sell, sell, neutral, buy, and strong buy. Table VI, Panel A presents the frequency with which each recommendation is issued. The results indicate a strong tendency towards issuing "neutral" and "buy" recommendations. Of our full sample (211,402 recommendations), 65,910 (31.18%) recommendations are "neutral" and

141,538 (66.95%) are “buy”. Analysts tend to shy away from “strong sell”, “sell”, and “strong buy” recommendations. Of the recommendations on independent companies, 64.41% are “buy” and 33.23% are “neutral”, while 72.02% and 28.70% are “buy” and “neutral”, respectively, for chaebol companies. The result indicates that analysts tend to issue more optimistic recommendations on chaebol companies, compared to independent companies. Of the recommendations issued in our sample, 95.62% have resulted in the recommendation to remain “unchanged”, compared to the previous recommendation.

<Insert Table VI here>

There is some evidence that earnings forecasts and stock recommendations are not directly linked. Schipper (1991) argues that earnings forecasts are merely an input towards generating the final product of stock recommendations. Bradshaw (2004) finds that a price-earnings-to-growth model is a mechanism by which analysts transform earnings forecasts into stock recommendations. EPS forecast errors and stock recommendations are not correlated in our sample. However, we find a positive relationship between stock recommendations and target prices. Analysts in Korea forecast the target stock prices of the companies they cover over the next 6 months, whereas analysts in the US forecast the one-year-ahead target price (see Brav and Lehavy(2003)). Using the target stock price and closing price on the issue date of the analyst’ report, we calculate the target price ratio which is the ratio of an analyst’s target price to the actual closing stock price of the company in question on the analyst’s report date. Panel B of Table VI reports the target price ratios associated with each recommendation level. The mean target price ratio is 1.08 for “neutral” recommendations while the mean is 1.33 for “buy” recommendations. The Pearson correlation coefficient between target price ratios and stock recommendations is 0.04 with a p-value of less than 0.01.

To further investigate the conflicts of interest incurred by chaebol analysts, we again test the hypotheses mentioned in the previous subsection using stock recommendations and target price ratios. In Panel A of Table VII, we first test the difference in proportions in recommendations issued by chaebol analysts for other chaebol and independent companies vs. for companies within the same chaebol. Out of the recommendations issued by chaebol analysts, 77.72% is strong buy or buy recommendations for the companies within the same chaebols while 59.53% is strong buy or buy recommendations for other chaebol and independent companies. The chaebol analysts issue neutral, sell, or strong sell recommendations more frequently for other chaebol and independent companies than for the companies within the same chaebol. The difference in proportions is statistically significant at 1% level. We then test the difference in proportions in recommendations for the same chaebol company and report the results in Panel B of Table VII. Analysts affiliated with the same chaebol issue strong buy and buy recommendation more frequently and neutral, sell, or strong sell recommendations less frequently than other chaebol and independent analysts. The difference in proportions is statistically significant.

<Insert Table VII here>

We then report univariate test results on target price ratios in Panel C & D of Table VII. Chaebol analysts forecast the mean and median target price ratios (1.30 and 1.26) statistically significantly higher for the companies within the same chaebols than those (1.27 and 1.22) for other chaebol and independent companies. For the same chaebol company, the mean and median target price ratios forecasted by analysts affiliated with the same chaebol are significantly higher than those forecasted by other chaebol and independent analysts. Overall, the univariate test results reported in Table VII corroborates the conflicts of interest hypothesis.

The effects of chaebol affiliation on recommendation levels are reported in Table VIII, using ordered logit estimation. The dependent variables in Models 1 and 2 are levels of the recommendation, where 5 stands for a “strong buy” recommendation, 4 represents a “buy” recommendation, 3 is “neutral,” and 2 and 1 correspond to “sell” and “strong sell” recommendations, respectively. We control for company and analyst characteristics using the variables used in Table V. The results in the Table show that analysts tend to issue better recommendations for companies with a larger size and a higher number of analysts following. Companies with higher leverage and more intangible assets tend to get worse recommendations from the analysts. The analysts who work for larger securities firms and cover more companies tend to issue more conservative recommendations. The coefficient on the dummy variable indicating chaebol companies in Model 1 is significantly negative, which indicates that chaebol companies tend to obtain more conservative recommendations from analysts after controlling for other determinants. The coefficient on the dummy variable indicating chaebol analysts is -0.498 with ($p < 0.01$), suggesting that the chaebol analysts tend to issue more conservative recommendations. We then add a dummy variable in Model 2 to indicate that companies and analysts are affiliated with the same chaebol. The coefficient on the dummy variable is 0.943 with a p-value of less than 0.01, indicating that chaebol analysts tend to issue better recommendations (by almost one level) for the member companies within the same chaebol. Consistent with the conflict of interest hypothesis, analysts seem to present a same-chaebol bias when issuing stock recommendations.

<Insert Table VIII here>

Model 3 of Table VIII reports a logit regression result in where the dependent variable is the upgrade or downgrade in analysts’ recommendations. The variable takes the value of 1 if the

recommendation is upgraded from the previous one issued by the same analyst and the value of 0 if the recommendation is downgraded. The same-chaebol affiliation dummy is not associated with more frequent upgrades. This result can be explained by chaebol analysts' tendency to issue better recommendations for the member companies within the same chaebol at the initial reports.

Brav and Lehavy (2003) find that analysts' target prices are incrementally informative in the presence of earnings forecasts and stock recommendations. Houston, James, and Karceski (2006) find that analysts affiliated with underwriters tend to set target prices of IPO companies at a higher premium relative to comparables during the bubble period. We investigate the effect of same-chaebol affiliation on target prices after controlling for company and analyst characteristics, as shown in Table IX. The dependent variable is the target price ratio, and the regressions are estimated based on fixed effects models. We find that target prices for chaebol companies are significantly lower than those for independent companies, and chaebol analysts tend to set lower target prices than do independent analysts. In Model 2 of Table IX, the coefficient on the dummy variable for companies and analysts affiliated with the same chaebol is 0.025 with a p-value of less than 0.01. This suggests that chaebol analysts set the target prices of the member companies within the same chaebol about 2.5% higher than those of non-affiliated companies, which is consistent with the conflict of interest hypothesis.

<Insert Table IX here>

The results reported in Table IV, V, VII, VIII, and IX are consistent with the conflicts of interest hypothesis for chaebol analysts. Chaebol analysts experience larger EPS errors on their forecasts for the member companies within the same chaebol. They also provide more optimistic stock recommendations and set higher target prices for their own chaebol-member companies.

4.3. Stock Market Reaction to Analysts' Stock Recommendations

The results above suggest the presence of conflicts of interest when analysts provide EPS forecasts, recommendations, and target prices on companies belonging to the same business group, or chaebol. This section investigates whether investors in the Korean stock market can accurately price these conflicts of interest by chaebol analysts. Since stock recommendations tend to be considered the analysts' final products, we investigate stock price movements around the announcements of the stock recommendations. If investors recognize the presence of conflict of interest, they should discount the informational value provided by chaebol analysts' recommendations on other member companies of their own chaebol. In order to test this hypothesis, we calculate the abnormal returns of the stocks covered by analysts around the date of issue of the analysts' recommendations. Abnormal return is computed as the difference between the stock return of the company and the equally weighted return of all stocks traded in Korean stock markets. Cumulative abnormal returns (CARs) are calculated as the sum of abnormal returns over the [-1,1] day window around the announcements of stock recommendations.

The results in Panel A of Table X show that there is a direct relationship between CARs and the level of recommendation. The mean excess return associated with "strong sell" recommendations is -1.74%, and "sell" recommendations are also associated with excess returns of -0.96%. The CAR for "neutral" recommendations is -0.36%. "Buy" and "strong buy" recommendations are both associated with positive excess returns (0.44% and 1.65%, respectively). The panel also shows that the investors react negatively (positively) to downgrades

(upgrades) in stock recommendations. Downgrades are associated with negative market reactions (CAR = -1.59%), whereas the abnormal returns to upgrades is 1.47%.

We compare CARs around recommendations issued for the same chaebol company, as shown in Panel B of Table X. There is no statistical difference in CARs around the recommendations issued by other chaebol and independent analysts vs. analysts affiliated with the same chaebol at the all levels of recommendations. The stock market reactions to downgrades or upgrades issued by other chaebol and independent analysts vs. analysts affiliated with the same chaebol are not statistically different.

<Insert Table IX here>

To further investigate whether the same-chaebol bias is recognized in capital markets, we use fixed effects regression analyses, as shown in Table XI. We include a natural log of assets and dummy variables indicating “strong buy” or “buy” recommendations, upgrades, and downgrades as control variables in the regression models. Investors react positively to strong buy or buy recommendations and upgrades, and negatively to downgrades, as expected, which is consistent with the results in Table X. The coefficient on the dummy variable indicating chaebol companies is significantly from Model 1 to Model 3, which indicates that the market react more negatively to the recommendations issued for chaebol companies. The coefficients on the dummy variable indicating chaebol analysts are not statistically significant. Our focus is on the same-chaebol bias. The coefficient of the dummy variable indicating companies and analysts affiliated with the same chaebol is not statistically significant. We also add an interaction term between the “strong buy” (or “buy”) recommendation and the same chaebol dummy in Model 2 and an interaction term between the upgrade and the same chaebol dummy in Model 3. The coefficients on the interaction terms are not statistically significant. These results suggest that

capital markets do not react negatively to the biased recommendations issued by chaebol analysts for the member companies within the same chaebol.

<Insert Table XI here>

The results in Tables X and XI indicate that CARs around the announcements of stock recommendations on chaebol companies are not statistically different regardless of whether the recommendations are issued by affiliated analysts or non-affiliated analysts. Thus, the market seems to attach similar informational value to recommendations provided by affiliated and non-affiliated analysts. This finding, in conjunction with the results indicating the presence of conflicts of interest, suggests that investors fail to recognize the conflicts of interest inherent in chaebol-affiliated analysts' reports on members of their own chaebols. These results suggest that investors may be naïve about the conflicts of interest inherent in analysts' forecasts.

5. Conclusions

Korean chaebols include dozens of industrial companies linked with inter-webbed governance and financial structures. They also include securities firms that produce analyst reports along with financial services. This unique and interconnected structure of chaebols increases the conflicts of interest faced by these analysts. The chaebol analysts make less accurate earnings forecasts for companies in their own chaebol. Indeed, they tend to produce more optimistic recommendations and target prices for these companies, which is in accordance with the conflict of interest hypothesis. Korean investors seem to be naïve, in that they give similar informational value to recommendations in the presence of more severe conflicts of interest and fail to price these conflicts of interest when the recommendations are released.

In the current financial environment where the conflicts of interest are increasing the public appetite for regulation, Korean chaebols seem to be going against the tide. Analyst forecasts may serve as a means for the controlling shareholders in the chaebols to expropriate more funds out of minority shareholders. Further research that connects potential tunneling in the chaebols with the analyst forecasts may shed more light into the severity of the consequences of these conflicts of interest.

There are also obvious regulatory policy implications for our results. Since financial markets do not seem to be pricing the conflicts of interest, Korea may benefit from regulation that restricts the chaebols from owning securities firms. Korea may prohibit chaebol affiliated securities firms from issuing reports on the member companies within the same chaebol. Another potential policy would be to mandate the implementation of Chinese walls between the research and investment banking functions of securities firms. There should be a Chinese wall between chaebol-affiliated securities firms and other member companies to curb the chaebol analysts' conflicts of interest. However, analysts in Korea are not explicitly regulated by any government authorities but are self-regulated within securities firms.

References

- Agrawal, A., Mark A. Chen, M. A., 2008. Do analyst conflicts matter? Evidence from stock recommendations. *Journal of Law and Economics* 51, 503-537.
- Bae, K. H., Kang, J. K., Kim, J. M., 2002. Tunneling or value added? Evidence from mergers by Korean business groups. *Journal of Finance* 57, 2695-2740.
- Bae, G. S., Cheon, Y. S., Kang, J. K., 2008. Intragroup propping: Evidence from the stock-price effects of earnings announcements by Korean business groups. *Review of Financial Studies* 21, 2015-2060.
- Bae, K. H., Stulz, R. M., Tan, H., 2008. A cross-country study of the performance of local analysts and foreign analysts. *Journal of Financial Economics* 88, 581-606.
- Baek, J.S., Kang, J.K., and Park, K.S., 2004. Corporate Governance and Firm Value: Evidence from Korean Financial Crisis. *Journal of Financial Economics*, 71, 265-313.
- Baek, J. S., Kang, J. K., Lee, I. M., 2006. Business groups and tunneling: Evidence from private securities offerings by Korean chaebols. *Journal of Finance* 61, 2415-2449.
- Barber, B., Lehavy, and Trueman, B., 2007. Comparing the stock recommendation performance of investment banks and independent research firms, *Journal of Financial Economics* 85, 490-517.
- Bradshaw, M.T., 2004, How Do Analysts Use Their Earnings Forecasts in Generating Stock Recommendations? *Accounting Review* 79, 25-50.
- Brav A. and Lehavy, R., 2003. An empirical analysis of analysts' target prices: short-term informativeness and long-term dynamics. *Journal of Finance* 58, 1933-1967.
- Chang, S. J. and Hong, J. B., 2000. Economic performance of group-affiliated companies in Korea: Intragroup resource sharing and internal business transactions. *Academy of Management Journal* 43, 429-448.
- Chang, J.J., Khanna, T., and Palepu, K., 2000. Analyst activity around the world, University of Pennsylvania working paper.
- Clarke, J., Khorana, A., Patel, A., Rau, P.R., 2007. The impact of All-Star analyst job changes on their coverage choices and subsequent investment banking deal flow. *Journal of Financial Economics* 84, 713-737.
- Cliff, M. T., 2007. Do affiliated analysts mean what they say? *Financial Management* 36, 5-29.
- Conroy, R. M., Fukuda, Y., and Harris, R. S., 1997. Securities houses and earnings forecasts in Japan: What makes for an accurate prediction? *Financial Analysts Journal* 53, 29-40.
- Cowen, A., Groyberg, B., Healy, P., 2006. Which type of analyst firms are more optimistic? *Journal of Accounting and Economics* 41, 119-46.
- Dugar, A. and Nathan, S., 1995. The effects of investment banking relationships on financial analysts' earnings forecasts and investment recommendations. *Contemporary Accounting Research* 12, 131-160.

- Ferris, S.P., Kim, K., Kitsabunnarat, P., 2003. The costs (and benefits?) of diversified business groups: The case of Korean Chaebol. *Journal of Banking and Finance* 27, 251-273.
- Greenspan, A., 2007. The age of turbulence: Adventures in a new world. Penguin Press: New York.
- Hong, H., Kubik, J. D., 2003. Analyzing the analysts: Career concerns and biased earnings forecasts. *Journal of Finance* 58, 313-51.
- Houston, J., James, C., Karceski, J., 2006. What a difference a month makes: stock analyst valuations following initial public offerings. *Journal of Financial and Quantitative Analysis* 41, 111-137.
- Irvine P.J.A., 2004, Do analysts generate trade for their firms? Evidence from the Toronto stock exchange. *Journal of Accounting and Economics* 30, 209-226.
- Jacob, J., Rock, S., Weber, D. P., 2008. Do Non-investment bank analysts make better earnings forecasts? *Journal of Accounting, Auditing, and Finance* 23, 23-61.
- Joh, S. W., 2003. Corporate governance and firm profitability: Evidence from Korea before the economic crisis. *Journal of Financial Economics* 68, 287-322.
- Lee, S., Park, K., Shin, H.H., 2009. Disappearing internal capital markets: Evidence from diversified business groups in Korea. *Journal of Banking and Finance* 33, 326-334.
- Ljungqvist, A., Marston, F., Starks, L. T., Wei, K. D., Yan, H., 2007. Conflicts of interest in sell-side research and the moderating role of institutional investors. *Journal of Financial Economics* 85, 420-56.
- Masulis, R.W., Pham, P.K., and Zein, J., 2010, Family Business Groups around the world: financing advantages, control motivations and organizational choices, University of New South Wales working paper.
- Mehran, H., Stutz, R., 2007. The economics of conflicts of interest in financial institutions. *Journal of Financial Economics* 85, 267-96.
- Michaely, R., Womack, K., 1999. Conflict of interest and the credibility of underwriter analyst recommendations. *Review of Financial Studies* 12, 653-86.
- O'Brien, P.C., McNichols, M., Lin, H.W., 2005. Analyst impartiality and investment banking relationships. *Journal of Accounting and Research* 43, 623-650.
- Petersen, M.A., 2009, Estimating standard errors in finance panel data sets: comparing approaches, *Review of Financial Studies* 22, 435-480.
- Schipper, K., 1991, Analysts' forecasts, *Accounting Horizons* 5, 105-131.
- Shin, H. and Park, Y.S., 1999. Financing constraints and internal capital markets: Evidence from Korean chaebols. *Journal of Corporate Finance* 5, 169-191.

Table I
List of Chaebols

Name	# of companies followed by analysts	Owning a securities firm within a chaebol
Samsung	14	Yes
Hyundai Motor	10	Yes
SK	12	Yes
LG	15	No
Lotte	6	No
Posco	4	No
KT	4	No
GS	3	No
Kumho Asiana	6	No
Hanjin	4	No
Hyundai Heavy Industries	2	No
Hanwha	3	Yes
Doosan	6	No
Hynix	1	No
Shinsegae	4	No
LS	4	No
Hyundai	4	Yes
Dongbu	6	Yes
CJ	8	Yes
Daelim	3	No
GM Daewoo	0	No
Daewoo Shipbuilding & Engineering	1	No
Hyundai Engineering & Construction	1	No
STX	4	No
Dongkuk Steel Mill	1	No
E-land	0	No
Hyundai Department Store	3	No
Kolon	5	No
Dongyang	3	Yes
KCC	1	No

The top 30 Korean business groups (chaebols) as of January 2008 are listed. The number of companies in the conglomerate that have analyst coverage is presented in the second column. The last column shows whether the conglomerate owns a financial securities firm.

Table II
Descriptive Statistics for EPS Forecasting

Panel A: Year-by-year breakdown

Year	Number of companies followed by analysts		Number of analysts		Number of securities firms
	Within chaebols	Independent	Chaebol-affiliated	Independent	
2000	99	628	70	93	25
2001	89	582	92	150	32
2002	102	485	132	236	32
2003	98	351	142	269	32
2004	98	363	161	277	32
2005	108	452	138	275	32
2006	108	497	142	279	30
2007	118	531	167	317	30
2008	105	494	155	349	35
Total	925	4,383	1,199	2,245	280

Panel B: Descriptive statistics

Variable	Mean	Median	Std	Min	Max
EPS forecast error (FE)	4.54%	1.41%	14.49%	-21.34%	104.51%
Absolute EPS forecast error (ABSFE)	6.57%	2.52%	13.69%	0%	104.51%
Number of analysts employed by securities firms	20.96	19	8.23	1	45
Number of companies covered by each analyst-year	13.92	13	6.58	1	55
Number of industry groups covered by each analyst-year	4.75	4	2.31	1	26
Number of days to fiscal year-ending	145	145	86	0	353

Panel A presents a year-by-year breakdown of analyst coverage for companies belonging to chaebols versus independent companies. The number of analysts who work for securities firms within chaebols versus independent analysts is also provided. Panel B presents the descriptive statistics for 164,249 earnings per share (EPS) forecasts. EPS forecast error is calculated as the ratio of the difference between the forecasted and actual EPS to the stock price, while absolute EPS forecast error represents the absolute value of the forecast error. The mean, median, standard deviation (std), minimum (min), and maximum (max) of the following variables are also presented: the number of analysts employed by securities firms, number of companies covered by each analyst-year, number of industry groups covered by each analyst-year, and number of days to fiscal year-ending.

Table III
Company Characteristics and Analysts' Forecasts for Chaebol vs. Independent Companies

Panel A: Characteristics by chaebol and independent companies

Variable	Independent companies		Chaebol-companies		Difference tests (p-values)	
	Mean	Median	Mean	Median	Mean	Median
Log (assets)	19.64	19.39	22.09	21.15	<0.01	<0.01
Long-term debt (%)	8.30	4.20	13.26	12.85	<0.01	<0.01
ROA(%)	9.07	9.20	7.91	7.73	<0.01	<0.01
ROE(%)	13.24	15.29	15.17	16.56	<0.01	<0.01
Intangible assets (%)	2.08	0.49	2.29	0.91	<0.01	<0.01
Market-to-book ratio of equity	1.99	1.40	1.50	1.24	<0.01	<0.01
R&D (%)	3.17	1.91	2.42	1.32	<0.01	<0.01
Number of analysts following	14.93	15.00	22.68	23.00	<0.01	<0.01

Panel B: Forecast characteristics for independent vs. chaebol companies

Variable	Independent companies		Chaebol companies		Difference tests (p-values)	
	Mean	Median	Mean	Median	Mean	Median
EPS forecast error (FE)	5.58%	2.11%	3.25%	0.74%	<0.01	<0.01
Absolute EPS forecast error (ABSFE)	7.32%	3.00%	5.92%	2.02%	<0.01	<0.01
Number of analysts employed by securities firms	21.46	21.00	21.00	20.00	<0.01	<0.01
Number of companies covered by each analyst-year	14.20	13.00	12.62	12.00	<0.01	<0.01
Number of industry groups covered by each analyst-year	4.75	4.00	4.41	4.00	<0.01	<0.01
Number of days to fiscal year-ending	148	149	149	151	<0.01	<0.01

Panel C: Forecast characteristics by independent vs. chaebol analysts

Variable	Independent analysts		Chaebol analysts		Difference tests (p-values)	
	Mean	Median	Mean	Median	Mean	Median
EPS forecast error (FE)	4.13%	1.30%	5.10%	1.53%	<0.01	<0.01
Absolute EPS forecast error (ABSFE)	6.22%	2.43%	7.35%	2.67%	<0.01	<0.01
Number of analysts employed by securities firms	18.98	19.00	24.49	25.00	<0.01	<0.01
Number of companies covered by each analyst-year	13.66	13.00	13.17	12.00	<0.01	<0.01
Number of industry groups covered by each analyst-year	4.56	4.00	4.64	4.00	<0.01	<0.01
Number of days to fiscal year-ending	149	150	148	151	0.48	0.22

Univariate tests of the effects of chaebol affiliation on the sample are presented. Panel A compares the characteristics of chaebol companies in the sample to the independent (non-chaebol) companies. Log (assets) is the natural log of the total assets of company. Long-term debt and intangible assets are presented as a percentage of the total assets of the company. ROA (return on asset, %) is the percentage of earnings before interests and taxes (EBIT) to total assets. ROE (return on equity, %) is the percentage of EBIT to equities. R&D (%) is the percentage of research and development expenses and the increase in research and development assets in the current year to total assets. Panel B presents the forecasts made by analysts following independent companies versus analysts covering companies that belong to a chaebol. EPS forecast error is calculated as the ratio of the difference between the forecasted and actual EPS to the stock price while absolute forecast error represents the absolute value of the forecast error. Panel C presents the differences in the forecasts issued by analysts working for chaebol-affiliated securities firms versus the forecasts issued by independent analysts. The p-values for difference in means tests and nonparametric difference in medians tests are provided.

Table IV
Effects of Analyst Independence on Forecast Accuracy

Panel A: Chaebol analysts' forecast accuracy

Variable	Forecasts for other chaebol- and independent companies			Forecasts for companies within the same chaebol			Difference tests (p-values)	
	N	Mean	Median	N	Mean	Median	Mean	Median
EPS forecast error (FE)	57,420	5.10%	1.55%	1,728	5.01%	0.98%	0.83	<0.01
Absolute EPS forecast error (ABSFE)	57,420	7.36%	2.70%	1,728	6.89%	2.16%	0.26	<0.01
<u>Chaebol companies only</u>								
EPS forecast error (FE)	24,563	3.80%	0.79%	1,728	5.01%	0.98%	<0.01	<0.01
Absolute EPS forecast error (ABSFE)	24,563	6.77%	1.98%	1,728	6.89%	2.16%	0.77	0.05

Panel B: Forecast accuracy for the same chaebol company

	Other chaebol- and independent analysts			Analysts affiliated with the same chaebol			Difference tests (p-value)	
	N	Mean	Median	N	Mean	Median	Mean	Median
EPS forecast error (FE)	27,122	3.23%	0.89%	1,267	5.36%	0.91%	< 0.01	0.84
Absolute EPS forecast error (ABSFE)	27,122	5.19%	1.77%	1,267	7.22%	1.81%	<0.01	0.59

EPS forecast error is calculated as the ratio of the difference between the forecasted and actual EPS to the stock price, while absolute forecast error represents the absolute value of the forecast error. Panel A presents the mean and median forecast errors made by chaebol analysts on the chaebol versus independent companies. Panel B compares the forecast errors for the same chaebol company made by other chaebol- and independent analysts to the errors made by analysts affiliated with the same chaebol. The p-values for difference in means tests and nonparametric difference tests in medians are provided.

Table V
Determinants of EPS Forecast Error

Variable	<u>OLS with clustered errors</u>		<u>Fixed effects</u>	
	Model 1	Model 2	Model 1	Model 2
Intercept	0.144 (<0.01)	0.144 (<0.01)		
<u>Company characteristics</u>				
Log (Assets)	-0.006 (<0.01)	-0.006 (<0.01)	-0.027 (<0.01)	-0.027 (<0.01)
Ratio of long-term debt-to-assets	0.237 (0.01)	0.237 (0.01)	0.303 (<0.01)	0.303 (<0.01)
Ratio of intangible assets-to-assets	0.168 (0.03)	0.168 (0.03)	0.417 (<0.01)	0.416 (<0.01)
Log (number of analysts following)	-0.033 (<0.01)	-0.033 (<0.01)	-0.041 (<0.01)	-0.041 (<0.01)
<u>Analyst characteristics</u>				
Log (number of analysts per securities firm)	0.004 (0.04)	0.003 (0.05)	0.004 (<0.01)	0.004 (<0.01)
Log (number of companies covered by each analyst-year)	0.015 (<0.01)	0.015 (<0.01)	0.006 (<0.01)	0.006 (<0.01)
Log (number of days to fiscal year-ending)	0.005 (<0.01)	0.005 (<0.01)	0.005 (<0.01)	0.005 (<0.01)
Chaebol companies	-0.001 (0.86)	-0.002 (0.80)	0.019 (<0.01)	0.019 (<0.01)
Chaebol analysts	0.009 (<0.01)	0.008 (<0.01)	0.003 (<0.01)	0.003 (<0.01)
Companies and analysts affiliated with the same chaebol		0.016 (0.08)		0.011 (<0.01)
N	122,313	122,313	122,313	122,313
R-squared (%)	7.31	7.32	33.96	33.97

EPS forecast error is calculated as the ratio of the difference between the forecasted and actual EPS to the stock price. The chaebol companies dummy is a dummy variable that takes the value 1 if the forecast is issued for a company that belongs to a chaebol. The chaebol analysts dummy is a dummy variable that takes the value 1 if the analyst issuing the forecast works for a securities firm affiliated with a chaebol. Companies and analysts affiliated with the same chaebol dummy takes the value 1 if a chaebol analyst is issuing a recommendation for a company within the same chaebol. The p-values for the coefficients are provided in parentheses.

Table VI
Descriptive Statistics for Analysts' Stock Recommendations

Panel A: The number of analysts' recommendations by levels and changes

<u>Recommendation</u>	<u>Full sample</u>	<u>Independent companies</u>	<u>Chaebol member companies</u>
Strong sell	297 (0.14%)	231 (0.20%)	66 (0.07%)
Sell	2,368 (1.12%)	1,707 (1.48%)	661 (0.69%)
Neutral	65,910 (31.18%)	38,403 (33.23%)	27,507 (28.70%)
Buy	141,538 (66.95%)	74,433 (64.41%)	67,105 (70.02%)
Strong buy	1,289 (0.61%)	789 (0.68%)	500 (0.52%)
Total	211,402 (100%)	115,563 (100%)	95,839 (100%)
<u>Recommendation changes</u>			
Downgrade	4,675 (2.41%)	2,712 (2.62%)	1,963 (2.17%)
Unchanged	185,291 (95.62%)	98,717 (95.38%)	86,574 (95.90%)
Upgrade	3,807 (1.96%)	2,065 (2.00%)	1,742 (1.93%)
Total	193,773 (100%)	103,494 (100%)	90,279 (100%)

Panel B: Analysts' recommendations and target price ratios

<u>Recommendation</u>	<u>Target price ratio</u>		
	N	Mean	Median
Strong sell	202	0.84	0.80
Sell	1,331	0.89	0.86
Neutral	37,626	1.08	1.07
Buy	131,771	1.33	1.29
Strong buy	1,163	1.66	1.61
Total	172,093	1.28	1.24

A breakdown of the sample according to analyst recommendations is provided. Analyst recommendations are issued using a five-tier scale of strong sell, sell, neutral, buy, and strong buy. Upgrades and downgrades are upward or downward changes in the recommendation from the previous recommendation by the same analyst. Panel A presents the number and percentage of recommendations and recommendation changes for full sample, independent companies, and chaebol companies that fall in each category, along with all the up or down movements in recommendations. Panel B illustrates the mean and median target price ratios associated with each category of recommendation. The target price ratio is a ratio of an analyst's target price to the closing stock price on the analyst's report date.

Table VII
Univariate Tests on Stock Recommendations and Target Price Ratios

Panel A. Recommendations by chaebol analysts								
Recommendations	Recommendations for other chaebol- and independent companies			Recommendations for companies within the same chaebol			Difference-in-Proportion tests (p-values)	
	Number	%		Number	%			
Strong buy or buy	63,290	59.53		2,494	77.72			<0.01
Neutral	40,375	37.98		709	22.09			<0.01
Sell or strong sell	2,644	2.49		6	0.19			<0.01
Total	106,309	100%		3,209	100%			

Panel B. Recommendations for the same chaebol company								
Recommendations	Recommendations by other chaebol- and independent analysts			Recommendations by analysts affiliated with the same chaebols			Difference-in-Proportion tests (p-values)	
	Number	%		Number	%			
Strong buy or buy	32,091	69.10		2,034	79.67			<0.01
Neutral	13,859	29.84		513	20.09			<0.01
Sell or strong sell	493	1.06		6	0.24			<0.01
Total	46,443	100%		2,553	100%			

Panel C. Chaebol analysts' forecasts								
Variable	Forecasts for other chaebol- and independent companies			Forecasts for companies within the same chaebol			Difference tests	
	N	Mean	Median	N	Mean	Median	Mean	Median
Target price ratios	73,808	1.27	1.22	2,514	1.30	1.26	<0.01	<0.01

Panel D: Forecasts for the same chaebol company								
	By other chaebol- and independent analysts			By analysts affiliated with the same chaebol			Difference tests (p-value)	
	N	Mean	Median	N	Mean	Median	Mean	Median
Target price ratios	35,685	1.26	1.24	2,245	1.30	1.26	<0.01	<0.01

Table VIII
Determinants of Recommendation Levels (Ordered Logit) and the Probability to Upgrade (Logit)

Variable	Recommendation levels		Upgrade vs. downgrade
	Model 1	Model 2	Model 3
Intercept	6.357 (<0.01)	6.332 (<0.01)	-2.128 (<0.01)
<u>Company characteristics</u>			
Log (Assets)	0.100 (<0.01)	0.103 (<0.01)	0.058 (<0.01)
Ratio of long-term debt-to-assets	-0.806 (<0.01)	-0.801 (<0.01)	-0.127 (0.56)
Ratio of intangible assets-to-assets	-2.105 (<0.01)	-2.096 (<0.01)	-0.488 (0.36)
Log (number of analysts following)	0.165 (<0.01)	0.162 (<0.01)	0.176 (<0.01)
<u>Analyst characteristics</u>			
Log (number of analysts per security firm)	-0.260 (<0.01)	-0.271 (<0.01)	0.003 (0.96)
Log (number of companies covered by each analyst-year)	-0.400 (<0.01)	-0.398 (<0.01)	0.084 (0.11)
Chaebol companies	-0.065 (<0.01)	-0.102 (<0.01)	-0.024 (0.67)
Chaebol analysts	-0.498 (<0.01)	-0.520 (<0.01)	0.079 (0.09)
Companies and analysts affiliated with the same chaebol		0.925 (<0.01)	0.135 (0.52)
N	211,402	211,402	8,483
Likelihood ratio	8,424	8,882	60

The dependent variables in the ordered logit regressions are recommendation levels. Recommendation levels range from 1 to 5, where 5 stands for a “strong buy” recommendation, 4 represents a “buy” recommendation, 3 is “neutral,” and 2 and 1 correspond to “sell” and “strong sell” recommendations, respectively. In Model 3 (logit regression), the dependent variable is 1 for recommendation upgrades and 0 for recommendation downgrades. The chaebol companies dummy is a dummy variable that takes the value 1 if the forecast is issued for a company that belongs to a chaebol. The chaebol-analysts dummy is a dummy variable that takes the value 1 if the analyst issuing the forecast works for a securities firm affiliated with a chaebol. The dummy variable for companies and analysts affiliated with the same chaebol takes the value 1 if a chaebol-affiliated analyst is issuing a recommendation for a company within the same chaebol. The p-values for the coefficients are provided in parentheses.

Table IX
Determinants of Analysts' Target Price Ratios (Fixed Effects Models)

Variable	Model 1	Model 2
<u>Company characteristics</u>		
Log (Assets)	0.040 (<0.01)	0.040 (<0.01)
Ratio of long-term debt-to-assets	-0.024 (0.08)	-0.025 (0.07)
Ratio of intangible assets-to-assets	0.070 (0.15)	0.066 (0.17)
Log (number of analysts following)	-0.020 (<0.01)	-0.020 (<0.01)
<u>Analyst characteristics</u>		
Log (number of analysts per securities firm)	-0.006 (<0.01)	-0.006 (<0.01)
Log (number of companies covered by each analyst-year)	-0.022 (<0.01)	-0.022 (<0.01)
Log (number of industries covered by each analyst-year)	0.001 (0.78)	0.001 (0.80)
Chaebol companies	-0.012 (<0.01)	-0.012 (<0.01)
Chaebol analysts	-0.007 (<0.01)	-0.007 (<0.01)
Companies and analysts affiliated with the same chaebol		0.025 (<0.01)
N	162,162	162,162
R-squared (%)	21.02	21.03

The Table presents the fixed effect regression results on target price ratios. The target price ratio is a ratio of an analyst's target price to the closing stock price on the analyst's report date. The chaebol companies dummy is a dummy variable that takes the value 1 if the forecast is issued for a company that belongs to a chaebol. The chaebol analysts dummy is a dummy variable that takes the value 1 if the analyst issuing the forecast works for a security firm affiliated with a chaebol. The dummy variable for companies and analysts affiliated with the same chaebol takes the value 1 if a chaebol-affiliated analyst is issuing a recommendation for a company within the same chaebol. The p-values for the coefficients are provided in parentheses.

Table X
Stock Returns Around the Issue of Analysts' Stock Recommendations

Panel A. CAR around the announcements of stock recommendations

	N	CARs (%)	
		Mean	Median
<u>Recommendation</u>			
Strong sell	464	-1.74	-1.86
Sell	3,112	-0.96	-1.31
Neutral	75,254	-0.36	-0.58
Buy	153,002	0.44	0.14
Strong buy	1,479	1.65	1.06
<u>Recommendation changes</u>			
Downgrade	5,421	-1.59	-1.40
Unchanged	202,426	0.14	-0.12
Upgrade	4,407	1.47	0.90

Panel B: CAR around recommendation levels and changes issued for the same chaebols

	Recommendation by other chaebol- and independent analysts			Recommendation by analysts affiliated with the same chaebol			Difference tests (p-values)	
	N	CAR (%)		N	CAR(%)		Mean	Median
		Mean	Median		Mean	Median		
<u>Recommendation levels</u>								
Strong buy or buy	32,066	0.38	0.14	2,034	0.31	0.14	0.52	0.91
Neutral	13,859	-0.10	-0.43	513	-0.20	-0.55	0.67	0.35
Sell or strong sell	493	-0.25	-0.70	6	-2.63	-1.55	0.48	0.42
<u>Recommendation changes</u>								
Downgrade	991	-1.15	-1.23	41	-0.88	-0.16	0.78	0.15
Upgrade	922	1.41	0.81	43	1.97	1.16	0.61	0.63

Abnormal return is a market-adjusted return calculated as the difference between the stock return of the company and the equally weighted return of all stocks traded in Korean stock markets. Cumulative abnormal return (CAR) is calculated as the sum of abnormal returns over the [-1,1] day window around the announcements of stock recommendations. Panel A presents the mean and median CARs around the announcements of stock recommendations and recommendation changes. Upgrades and downgrades are upward or downward changes in the recommendation from the previous recommendation by the same analyst. Panel B compares the mean and median CARs around the announcements of stock recommendations issued by other chaebol and independent analysts vs. analysts affiliated with the same chaebol for the member companies within the same chaebols. The p-values for difference in means tests and nonparametric difference in medians tests are provided.

Table XI
Determinants of Stock Returns Around the Issue of Analysts' Stock Recommendations
(Fixed Effects Models)

Variable	Model 1	Model 2	Model 3
Log of assets	-0.004 (<0.01)	-0.004 (<0.01)	-0.004 (<0.01)
Strong buy or buy recommendation	0.007 (<0.01)	0.007 (<0.01)	0.007 (<0.01)
Upgrade	0.011 (<0.01)	0.011 (<0.01)	0.011 (<0.01)
Downgrade	-0.014 (<0.01)	-0.014 (<0.01)	-0.014 (<0.01)
Chaebol companies	-0.001 (0.03)	-0.001 (0.03)	-0.001 (0.03)
Chaebol analysts	-0.0003 (0.19)	0.0001 (0.87)	-0.0003 (0.19)
Companies and analysts affiliated with the same chaebol	-0.001 (0.24)	-0.001 (0.27)	-0.001 (0.24)
Strong buy (or buy) recommendation x the same chaebol		-0.001 (0.13)	
Upgrade x the same chaebol			0.0001 (0.93)
N	221,757	221,757	221,757
R-squared (%)	2.94	2.94	2.94

The Table presents the fixed effects regression results on cumulative abnormal returns (CARs) around the issue of analysts' stock recommendations. Abnormal return is a market-adjusted return calculated as the difference between the stock return of the company and the equally weighted return of all stocks traded in Korean stock markets. CAR is calculated as the sum of abnormal returns over the [-1,1] day window around the announcements of stock recommendations. Buy or strong buy recommendation indicates a dummy variable that takes 1 for "buy" or "strong buy" and otherwise 0. Upgrade indicates a dummy variable that takes 1 if the recommendation is upgraded from the previous recommendation by the same analyst, and otherwise 0. Downgrade indicates a dummy variable which takes 1 if the recommendation is downgraded from the previous recommendation by the same analyst, or otherwise 0. The chaebol companies dummy is a dummy variable that takes the value 1 if the forecast is issued for a company that belongs to a chaebol. The chaebol analysts dummy is a dummy variable that takes the value 1 if the analyst issuing the forecast works for a security firm affiliated with a chaebol. The dummy variable for companies and analysts affiliated with the same chaebol takes the value 1 if a chaebol-affiliated analyst is issuing a recommendation for a company within the same chaebol. Strong buy (or buy) recommendation x the same chaebol is an interaction term between the strong buy (or buy) recommendation and the same chaebol dummy. Upgrade x the same chaebol is an interaction term between the upgrade and the same chaebol dummy. The p-values for the coefficients are provided in parentheses.